

## **IN THE CLAIMS**

1. (Currently Amended) A liquid crystal display device comprising:  
a first substrate;  
a second substrate arranged facing the first substrate with a pre-set gap in-between the first and second substrates;  
liquid crystals held in said gap;  
means for applying an electrical field to said liquid crystals to change the state of orientation thereof;  
a wall structure formed in each of a plurality of small-sized areas obtained on subdivision along the first substrate for orienting the liquid crystals lying in each small-sized area axially symmetrically on application of said electrical field, said wall structure encircling a rectangular area of the first substrate, said rectangular area forming a concave structure; and  
a groove structure formed within said concave structure in each of said small-sized areas in said first substrate and adapted for adjusting the axial symmetrical orientation of said liquid crystals in cooperation with said wall structure,  
wherein said groove structure extends along diagonal lines of said rectangular area encircled by said wall structure, wherein the liquid crystals in each small-sized area are divided into four groups, wherein each group is bound by a respective portion of the wall structure, wherein substantially all of the liquid crystals in given group are oriented in a direction perpendicular to the respective portion of the wall structure for that group and are oriented symmetrically with respect to an axis perpendicular to a point of intersection of said two diagonals lines.

2. (Cancelled)

3. (Cancelled)

4. (Previously Presented) The liquid crystal display device according to claim 1 wherein said first substrate is a transparent plate and a color filter layer, a transparent insulating layer and a transparent electrically conductive layer are formed on one surface thereof;

said groove structure being formed by patterning at least one of said color filter layer, transparent insulating layer and the transparent electrically conductive layer.

5. (Previously Presented) The liquid crystal display device according to claim 1 wherein said first substrate includes an electrode as means for applying an electronic field to said first substrate; and

wherein said groove structure is formed in an insulating layer formed in said electrode itself or in an insulating film arranged on a reverse surface or a front surface of said electrode.

6. (Original) The liquid display device according to claim 1 wherein said liquid crystals are of negative dielectric constant anisotropy and

wherein the surfaces of said two substrates are processed for orientation for orienting said liquid crystals perpendicularly in the absence of applied voltage.

7. (Original) The liquid crystal display device according to claim 1 wherein a photopolymerizable resin is added to said liquid crystals for stabilizing the state of axially symmetrical orientation produced on application of an electrical field.

8. (Previously Presented) The liquid crystal display device according to claim 1 wherein the axially symmetrical orientation of said liquid crystals is distorted along a central axis and display is performed by exploiting TN mode liquid crystals, which utilizes optical rotating characteristics.

9. (Original) The liquid crystal display device according to claim 8 wherein a chiral substance is added to said liquid crystals for distorting the state of orientation thereof.

10. (Previously Presented) The liquid crystal display device according to claim 1 wherein the axially symmetrical orientation of said liquid crystals is not distorted along a central axis and display is performed by exploiting ECB mode liquid crystals, which utilizes birefringence.

11. (Original) The liquid crystal display device according to claim 1 wherein said means for applying the electrical field is made up of signal electrodes formed in columns on one substrate and discharge channels formed in rows in the other substrate, said discharge channel being separated from said liquid crystals by a dielectric sheet.

12. (Previously Presented) The liquid crystal display device according to claim 1 wherein said means for applying the electrical field comprises an electrode formed on each of the substrates, wherein the electrodes are facing each other with said liquid crystals in-between.

13. (Cancelled)

14. (New) A liquid crystal display device comprising:

a first substrate;

a second substrate facing the first substrate;

liquid crystals between the first and second substrates;

means for applying an electrical field to the liquid crystals;

a wall structure encircling a rectangular area of the first substrate, wherein the wall structure includes a first wall connected with a second wall at a first corner, a second wall connected with a third wall at a second corner, a third wall connected with a fourth wall at a third corner, and wherein the fourth wall is connected with the first wall at a fourth corner; and

a groove structure formed within the rectangular area, wherein the groove structure includes a first groove from the first corner to the third corner and a second groove from the second corner to the fourth corner, wherein the first and second grooves divide the rectangular area into four and only four groups, wherein each group is bound by a respective wall, and wherein substantially all of the liquid crystals in given group are oriented in a direction perpendicular to the respective wall for that group.

15. (New) The liquid crystal display device according to claim 14, wherein the liquid crystals in each group are oriented symmetrically with respect to an axis perpendicular to a point of intersection of the first and second grooves.

16. (New) The liquid crystal display device according to claim 14, wherein the wall structure encircles a rectangular area of the first substrate and the rectangular area forms a concave structure.

17. (New) A liquid crystal display device comprising:  
liquid crystals between a first substrate facing a second substrate;  
means for applying an electrical field to the liquid crystals;  
a wall structure encircling an area of the first substrate, wherein the wall structure is a polygon which includes n number of walls and n number of corners; and  
a groove structure formed within the area, wherein the groove structure includes grooves which divides the area into exactly n number of groups, wherein each group is bound by a respective wall, and wherein substantially all of the liquid crystals in given group are oriented in a direction perpendicular to the respective wall for that group.

18. (New) The liquid crystal display device according to claim 17, wherein the liquid crystals in each group are oriented symmetrically with respect to an axis perpendicular to a point of intersection of the grooves.

19. (New) The liquid crystal display device according to claim 17, wherein the wall structure encircles a rectangular area of the first substrate and the rectangular area forms a concave structure.

20. (New) A liquid crystal display device comprising:  
a first substrate;  
a second substrate facing the first substrate;  
liquid crystals between the first and second substrates;  
means for applying an electrical field to the liquid crystals;  
a wall structure encircling a rectangular area on the first substrate, the rectangular area forming a concave structure; and  
a groove structure formed within the rectangular area, wherein the groove structure includes a first and second groove which divides the rectangular area into exactly four groups, wherein each group is bound by a respective portion of the wall structure, and

wherein substantially all of the liquid crystals in given group are oriented in a direction perpendicular to the respective portion of the wall structure for that group.